Claims

1. Semiconductor-on-insulator substrate successively comprising a base (1), a diamond-like carbon layer (3), a dielectric layer (4) and a layer made of semi-conducting material (5) designed to constitute microelectronic elements, substrate characterized in that the dielectric material (4) is chosen such that the upper level (Edi) of the valence band of the dielectric material (4) is lower than the upper level (Ecd) of the valence band of the diamond-like carbon (3) and that the semi-conducting material (5) is chosen such that the upper level (Esc) of the valence band of the semi-conducting material (5) is higher than the upper level (Ecd) of the valence band of the diamond-like carbon (3).

2. Substrate according to claim 1, characterized in that the semi-conducting material (5) is chosen from silicon, germanium and indium antimonide.

3. Substrate according to one of the claims 1 and 2, characterized in that the dielectric material (4) is chosen from alumina (Al2O3), hafnium oxide (Hf02) and zirconium oxide (ZrO2).

4. Substrate according to claim 3, characterized in that the dielectric layer (4) is made from monocrystalline alumina.

5. Substrate according to any one of the claims 1 to 4, characterized in that it comprises a nucleation layer (2) disposed between the base (1) and the diamond-like carbon layer (3).

6. Substrate according to claim 5, characterized in that the nucleation layer (2) is made of metallic material.

7. Substrate according to claim 6, characterized in that the material of the nucleation layer (2) is chosen from nickel, iridium and platinum.

8. Substrate according to claim 5, characterized in that the nucleation layer (2) is made of alumina.

9. Substrate according to claim 8, characterized in that the nucleation layer (2) is made of monocrystalline alumina.

10. Substrate according to any one of the claims 1 to 9, characterized in that the dielectric layer (4) is formed by superposition of two dielectric layers.

11. Method for making a substrate according to any one of the claims 1 to 10, characterized in that it comprises preparation of a first stack (11) by:

- deposition of the diamond-like carbon layer (3) on the base (1),
- and deposition of the dielectric layer (4) on the diamond-like carbon layer (3).

12. Method according to claim 11, characterized in that it comprises deposition of the nucleation layer (2) on the base (1), before deposition of the diamond-like carbon layer (3).

13. Method according to one of the claims 11 and 12, characterized in that it comprises deposition of the semi-conducting material (5) designed to constitute microelectronic elements, after deposition of the dielectric layer (4).

14. Method according to any one of the claims 11 and 12, characterized in that it comprises preparation of a second stack (12) by:

- deposition of a first additional dielectric layer (14) on an additional base (13),

- deposition of the semi-conducting (5) material designed to constitute microelectronic elements, on the first additional dielectric layer (14),
- and deposition of a second additional dielectric layer (15) on the semi-conducting material (5),

and, after preparation of the first (11) and second (12) stacks, assembly of the first (11) and second (12) stacks by molecular bonding of the second additional dielectric layer (15) and of the dielectric layer (4), the additional base (13) then being removed by etching.

15. Method according to claim 14, characterized in that it comprises removal of the first additional dielectric layer (14).

16. Method according to one of the claims 11 and 12, characterized in that, a second stack (12) being formed by an additional substrate comprising a thin film (18) of the semi-conducting material (5) designed to constitute microelectronic elements, the thin film (18) being delineated by a buried zone (19) fragilized by implantation, the first (11) and second (12) stacks are assembled by molecular bonding of the thin film (18) and of the dielectric layer (4), the second stack (12) being dissociated, after bonding, at the level of the fragilized buried zone (19).

17. Method according to claim 16, characterized in that it comprises thermal oxidation of the thin film (18), before assembly, so as to form a thermal oxide layer (20).